

### REMARKS

The office action indicates that claims 110-113 and 117-119 are allowed, and that claims 68, 71, 72, 74-77, 84, 92-94, 97, and 98 would be allowable if rewritten in independent form including all base claim limitations and any intervening claim limitations. The applicant will rewrite the claims accordingly should base claims from which they depend not eventually be allowed. The applicant has overcome all remaining objections and rejections against the subject application, as is more fully set forth below.

Claims 66-124 are pending in the application.

The office action suggests that the applicant conform the specification to the format set forth in 37 CFR 1.77(b). The applicant has amended the application to conform to this format as suggested.

The office action objects to the spacing of the lines of the specification. The applicant will submit an amended double-spaced specification in due course.

The office action rejects claims 66, 86, and 101 under 35 U.S.C. § 102(e) as being anticipated by Ulrichsen et al. According to the office action, Ulrichsen et al. disclose all the limitations of these claims.

In response, the applicant asks that the examiner reconsider his assessment of the limitations of claims 66, 86 and 101. In relation to claim 66 and 86, the office action misplaces the word "converge," significantly changing the perceived scope of the claims. These two claims actually recite "... the beams of the varied medium which are received at said detecting means emanate from respective detection zones travel along respective paths from said matter to said mirror which paths converge continuously with respect to each other from said matter to said mirror . . . ." In contrast, the office action quotes these claims as reciting "the beams of the varied medium which are received at

said detecting means and emanate from the respective detection zones travel along respective paths from said matter to said mirror which paths continuously with respect to each other from said matter converge to said mirror.” (Claim 101 does not require that the paths converge continuously).

The Examiner relies upon Figure 2 of Ulrichsen et al. as showing this feature. However, according to the wording of the present claims 66 and 86, the arrangement is such that the beams of the varied medium which are received at the detecting means and which emanate from the respective detection zones travel along respective paths from the matter to the mirror which paths converge continuously with respect to each other from the matter to the mirror. As shown in Figure 2 of Ulrichsen et al., the beams which emanate from the respective detection zones at the matter on the conveyor belt to the mirror 107 travel along paths which are parallel to each other. In the Ulrichsen et al. case it is only from the mirror 107 to the rotary polygonal mirror 108 that the paths of the beams converge with respect to each other (i.e. not from the detection zones at the matter to the rotary polygonal mirror).

In relation to claim 101, the feature of a rotary polygonal mirror arranged to receive directly from the matter detection medium varied by variations in the matter is clearly not disclosed in Ulrichsen et al., which requires a further mirror 107 to be present between the matter and the rotary polygonal mirror 108.

In light of the above arguments, the applicant maintains that the Ulrichsen et al. patent does not anticipate claims 66, 86, or 101.

The office action rejects claims 67 and 87 under 35 U.S.C. § 103(a) as being unpatentable over Ulrichsen et al. in view of WO 98/44335. According to the office action, Ulrichsen et al. disclose the claimed device except for the mirror being “arranged to receive the varied medium directly from the matter,” and that it would have been obvious to combine the Ulrichsen et al. device with the “arranged mirror” of WO

98/44335 “for the purpose of providing direct view of the matter, therefore increasing the sensitivity of the measurement.

The office action admits, for the purposes of this obviousness rejection, that Ulrichsen et al. does not disclose the rotary polygonal mirror receiving the varied medium directly from the matter. Yet the office action has already rejected claim 101 as being anticipated by Ulrichsen et al. – apparently not recognizing the mirror as being a feature that distinguishes claim 101 over Ulrichsen et al.

The office action asserts that, if the teaching of Ulrichsen et al. were to be combined with that of International Patent Application Publication WO98/44335, claims 67 and 87 would be obvious. However, claims 67 and 87 are patentable by virtue of their appendency to claims 66 and 86 respectively, which specifies that the paths of the beams from the matter to the mirror “do not substantially coincide with any significant part of the path of the emitted detection medium from the emitting means to the matter.” Avoidance of such coincidence avoids the detecting means being swamped by the emitted detection medium so that their sensitivity to variations is poor. Such swamping does not appear to be avoided in WO98/44335.

In addition, the applicant maintains that the office action doesn’t properly support its obviousness determination with regard to claims 67 and 87. It’s well settled that, to support an obviousness determination, you must show why a skilled person, confronted with the same problem as the inventor and with no knowledge of the claimed invention, would select the elements from the cited prior art references for combination in the manner claimed. To help reduce the likelihood of a hindsight-type analyses in these situations, the courts have held that an examiner, to support an obviousness finding, must show a motivation to combine the references that create the case of nonobviousness. See, e.g., *In re Rouffet*, 47 U.S.P.Q.2d 1453, 1457-1458 (Fed. Cir. 1998). This motivation to combine may be found either in prior art teachings, the knowledge of persons of ordinary skill in the art, or in the nature of the problem solved. *Id* at 1458. *In re*

Rouffet, the Board relied upon none of these. Rather, the Board relied on the high level of skill in the art as evidence of likely motivation. Similarly, the present office action relies on the recitation of *advantages* that the mirror would realize, i.e., the ability to provide “direct view of the matter, therefore increasing the sensitivity of the measurement.” However, while the level of skill in the art is at least part of the judicially defined inquiry for a suggestion to combine, the ability to identify or think up an advantage is not. If the ability to identify or think up an advantage were alone sufficient to supply a motivation to combine, then, because there is at least some advantage to almost all claimed combinations, the test would be useless to preclude hindsight analyses. The PTO could routinely identify claimed elements in the prior art, observe that there was an advantage in combining them as the applicant has claimed, and simply reject the claims on that basis. The mere existence of an advantage would thereby almost always prevent patentable inventions.

Although motivation need not be found by identifying an explicit teaching or suggestion in all cases, it's not enough to simply identify an advantage. There must at least be some *implicit* teaching or suggestion in the prior art or general knowledge that would have motivated one skilled in the art to combine the references. In *re Oetiker*, 24 USPQ2d 1443, 1446-1447 (Fed. Cir. 1992); In *re Rouffet* at 1458 (motivation may be found in “the nature of the problem to be solved . . .”). To show that there's an implicit suggestion, the Examiner must show that one skilled in the art would know to use a prior art teaching to solve the problem that the applicant sought to solve through the invention in question. In *re Oetiker* at 1446-1447. For this to be the case the problem that the invention solves must be the same as or at least similar to the problem that the prior art teaching solves. Here, again, it's not sufficient to merely identify an advantage that the combination would realize.

As such, the applicant maintains that claims 67 and 87 are patentable over Ulrichsen et al. in view of WO 98/44335.

The office action rejects claims 69, 70, 73, 78-83, 88, 89, 95, and 96 under 35 U.S.C. § 102(e) as being anticipated by Ulrichsen et al. According to the office action, Ulrichsen et al. disclose all the limitations of these claims.

In relation to claims 69 and 88, the applicant asks that the examiner reconsider his interpretation of Figure 2 of Ulrichsen et al. Upon close examination, it becomes apparent that Ulrichsen et al. simply disclose a row of lamps 105 which emit electromagnetic radiation onto the conveyor belt, so creating a detection area which is constantly present. Claims 69 and 88 require the actual emitting means to emit the detection medium as an actual scanning beam which moves to-and-fro over the detection zones. In Ulrichsen et al. the illuminated detection area is scanned by the rotary polygonal mirror, but the lamps 105 clearly do not emit a scanning beam.

With regard to claims 70 and 89, there is no disclosure whatsoever in Ulrichsen et al. that the emitting means emits the detection medium in the form of a plurality of scanning beams. Please note, from Figure 2 of Ulrichsen et al., that there are a plurality of lamps 105, but that these lamps, as mentioned above, do not emit detection medium in the form of a plurality of scanning beams.

In relation to claim 73, the applicant again asks that the examiner reconsider his interpretation of Figure 2 of Ulrichsen et al. in that, clearly, the emitting means 105 and the rotary polygonal mirror 108 are located on the same side of the matter, i.e. both being located above the conveyor belt. A similar comment applies to claim 95.

Claim 78 is allowable through its appendency to claim 66.

Claim 79 requires the rotary polygonal mirror to have its axis of rotation at substantially the axis of its polygon and extending in the feed direction. In Ulrichsen et

al. the axis of rotation of the rotary polygonal mirror disclosed is one which is substantially perpendicular to the feed direction.

In relation to claim 80, again there is no disclosure in Ulrichsen et al. of the emitting means emitting the detection medium in the form of a scanning beam, as already discussed above.

With regards to claims 81 and 96, Figure 2 of Ulrichsen et al. does not disclose, in any way whatsoever, matter falling freely through the detection station; the only place where matter falls freely in Figure 2 of Ulrichsen et al. is at the end of the conveyor belt and thus after the matter has passed through the detection station on the conveyor.

For claim 82, the office action asserts that the air jet nozzles 116, which he takes to be the distributing means of claim 82, are arranged to cause the matter to fall freely in a curved distribution around a vertical axis. The air jet nozzles 116 are arranged so that they blow the matter upwardly after which it freely falls in a curved distribution, yet it is not around a vertical axis as required by the claim, but around horizontal axes parallel to the row of air jet nozzles.

In relation to claim 83, Ulrichsen et al. do not disclose distributing means arranged to cause the distribution of matter to be at a substantially constant radius from the vertical axis, since firstly there is not such vertical axis and secondly the distribution produced by the air jet nozzles is clearly not at a constant radius relative to any axis whatsoever.

The applicant thus maintains that the Ulrichsen et al. patent doesn't anticipate claims 69, 70, 73, 78-83, 88, 89, 95, or 96.

The office action rejects claims 85, 100, and 122 under 35 U.S.C. § 103(a) as being unpatentable over Ulrichsen et al. According to the office action, Ulrichsen et al. disclose the invention recited in each of these claims “except for the use of visible light wavelength as the detection medium,” and “it would have been obvious to combine Ulrichsen et al. with the visible light wavelength since it is well known in the art that using visible wavelengths allows one to inspect different variations of matter, therefore increasing the measurement parameters of the apparatus.”

In response, the applicant maintains that this rejection is improper since it doesn't adequately address the factual issue of whether there was a motivation to combine Ulrichsen et al. with the practice of using visible light wavelengths as detection mediums. It's not enough to make the requisite findings - there must also be an explanation of how the findings support the conclusion of motivation *In re Lee*, 61 USPQ2d 1430 (Fed. Cir. 2002). In addition, the question of motivation can't be resolved on subjective belief and unknown authority. *Id.* As such, the applicant requests that the examiner produce evidence of an example of the use of visible light wavelengths as a detection medium to aid in the analysis.

For this reason, and because Claims 85, 100, and 122 depend from allowable base claims, the applicant maintains that these claims are allowable.

The office action rejects claim 90 under 35 U.S.C. § 102(e) as being anticipated by Ulrichsen et al. According to the action, Ulrichsen et al. disclose all the limitations of claim 90. In response, the applicant maintains that there is not disclosure in Ulrichsen et al. that each detection zone is in the form of a group of detection spots. Ulrichsen et al. simply discloses a plurality of detection zones. Having a group of detection spots in each detection zone increases the resolution of detection. As such, the applicant maintains that the Ulrichsen et al. patent doesn't anticipate claim 90.

The office action rejects claim 91, and 115 under 35 U.S.C. § 103(a) as being unpatentable over Ulrichsen et al. According to the action, Ulrichsen et al. disclose all the limitations of these claims “except for the matter being granules,” and that it’s well known in the art that measuring granules increases the sorting capability of the apparatus.

The applicant maintains that this rejection is improper because, as with the other rejections made in this office action under § 103(a), the action fails to identify either an explicit or an implicit teaching or suggestion in the prior art or general knowledge that would have motivated one skilled in the art to combine the references.

For this reason, and because these claims depend from allowable base claims, the applicant maintains that claims 91 and 115 are patentable over Ulrichsen et al.

The office action rejects claims 99, 102-109, 114, 116, 120, 121, and 123 under 35 U.S.C. § 102(e) as being anticipated by Ulrichsen et al. According to the action, Ulrichsen et al. disclose all the limitations of these claims.

The applicant has amended Claim 99 to more clearly recite the distinguishing feature that the variations in the intensity of the detection medium in dependence upon the respective orientations of the surfaces of an object are used to obtain an indication of a dimension of the object. This is certainly not shown in Figure 2 of Ulrichsen et al. upon which the office action relies.

Claim 102 is allowable through not only its appendancy to claim 101 but, as for claim 79, the feature of the axis of rotation of the rotary polygonal mirror extending in the feed direction.

In relation to claim 103, the applicant asks that the examiner reconsider his identification of the curved mirror 107 in Figure 2 of Ulrichsen et al. as being a folding mirror. Folding mirrors are planar mirrors and so reflect parallel beams parallel



to each other. Upon closer examination it becomes apparent that, in Figure 2 of Ulrichsen et al., the mirror 107 is not a folding mirror.

In relation to claim 104, the distinguishing feature over Ulrichsen et al. is that the method comprises emitting a beam of detection medium so that the beam scans the matter. As discussed previously, this emitting of a beam which actually scans the matter is not disclosed in Ulrichsen et al.

Claim 105 is patentable through its appendancy to claim 104.

Regarding claim 106 the office action asserts that the electromagnetic field generated across the width of the stream in Ulrichsen et al. is emitting a second beam of detection medium. Even if this were true, the second beam does not scan the matter as recited in claim 106. In Ulrichsen et al., this electromagnetic field is constantly present and distorted when metallic objects pass through it; there is no scanning performed whatsoever. For this reason, and because claim 106 depends from an allowable base claim, the applicant maintains that claim 106 is allowable.

Claims 107, 108 and 109 are parallel apparatus claims to the method of claims 104, 105 and 106 respectively and are allowable for the same reasons discussed in relation to claims 104 to 106.

In relation to claim 114, as already discussed in respect of claim 90, Ulrichsen et al. does not disclose receiving the varied medium at the receiving means from, in turn, groups of detection spots at the matter, whereof each group contains a plurality of the detection spots and provides one of the detection zones. Thus, the detection spots are arranged so as to form a detection zone, and this feature is clearly not being disclosed in Ulrichsen et al. which simply discloses individual detection zones. As already mentioned, the advantage of having detection spots make up the zones is to increase the resolution of detection.

Claim 116 is a parallel apparatus claim to the method of claim 114 and is therefore allowable for the same reasons as discussed for claim 114.

With regards to claim 120, Ulrichsen et al. does not disclose either a scanning beam to irradiate a path over the matter or inspecting means arranged to inspect the radiated path over the matter at an oblique angle to the matter, nor does it disclose ascertaining means arranged to ascertain from the inspection the general profile of the path of the scanning beam over the matter. The passage that the office action mentions from Ulrichsen et al., i.e. that of columns 9-10, lines 36-26, seems to be totally irrelevant since it relates to an arrangement where one-and-the same detection station is employed for at least two streams of matter simultaneously.

The applicant has amended claim 121 to make it clear that the detecting means is at the opposite side of the matter from the emitting means. In relation to the description of Figure 2 of Ulrichsen et al., there is no disclosure of such a feature.

Referring to claim 123, item 107 is not a shielding means of the character claimed but is, instead, a mirror that is clearly unable to prevent the detecting means 120 from receiving the medium directly from the emitting means 105.

In light of the above arguments, the applicant maintains that Ulrichsen et al. doesn't anticipate claims 99, 102-109, 114, 116, 120, 121, or 123.

The office action rejects claim 124 under 35 U.S.C. § 103(a) as being unpatentable over Ulrichsen et al. According to the action, Ulrichsen et al. disclose all the limitations of these claims "except for a Fresnel lens located between the emitting and the detecting means," and it would have been obvious to combine Ulrichsen et al. with the location of the Fresnel lens "since it was well known in the art that the use of a

Fresnel lens increases the sensitivity of the light beam therefore making the measurements more accurate.”

Again, the applicant maintains that this rejection is improper for failing to address the factual issue of whether there was a motivation to combine Ulrichsen et al. with the practice of using of a Fresnel lens to increase the sensitivity of a light beam. The office action provides no explanation of how the findings support the conclusion of motivation as required by the Federal Circuit in *In re Lee*. The applicant requests that the examiner do so, and that the examiner produce evidence of an example of the use of a Fresnel lens to make measurements more accurate by increasing the sensitivity of a light beam.

For this reason, and because claim 124 depends from an allowable base claim, the applicant maintains that claim 124 is allowable.

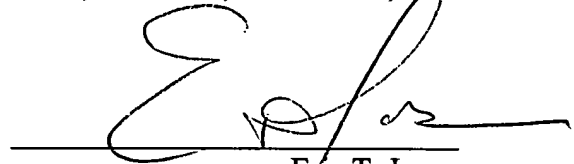
Claims 66-124 recite patentable subject matter and are allowable. Therefore, the applicant respectfully submits that the application is now in condition for allowance and respectfully solicits such allowance. Please favorably reconsider the outstanding office action.

May 18, 2004

I authorize the Assistant Commissioner to charge any deficiencies, or credit any overpayment associated with this communication to Deposit Account No. 50-0852. A duplicate copy of this sheet is enclosed.

Respectfully submitted,

REISING, ETHINGTON, BARNES, KISSELLE, P.C.

A handwritten signature in black ink, appearing to read 'Eric T. Jones', is written over a horizontal line.

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